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SELECTED MILITARY TRANSLATIONS ON EASTERN EUROPE

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I. ORGANIZATIONAL PROBLEMS IN HANDLING MASS BURN WOUNDS

/Pages 18-24/

by Dr. Endre Tamas

Large numbers of burn wounds may occur in any army equipped with modern technology, machines and engines, both under wartime and peacetime conditions. The matter of burn wounds acquires special significance through the possibility of the use of atomic weapons, in which case very large numbers of burn wounds; accompanied by extensive and serious injuries occur. The serious cases require all means of therapeutic treatment, and furthermore, the large number of cases encountered simultaneously requires complete mobilization of the institution handling these cases. In this serious taxing of facilities successful functioning depends to a great degree upon the training of the personnel and the degree of preparedness of the organization. The civilian public health organs also are attributing increasing importance to ensuring modern care of burn wounds, and the smaller traumatological wards are profiling special rooms for the housing and treatment of burn cases. Although at present the only special ward dealing exclusively with burn cases is in Budapest, the trend of development demands that every emergency-surgical ward be prepared for handling of mass burn cases.

The handling of burns includes therapeutic procedures founded on the broadest bases. In addition to local treatment, ensuring strictly aseptic conditions, and maintaining of vital functions, the anti-shock struggle is the first, and most important activity, and the further treatment of the wounded also is of great importance, which affects the recuperation time and the later restoration of work capacity. Complex treatment may be realized only if the material prerequisites are ensured, the therapeutic personnel clearly understand their tasks, and perform their duties efficiently and with precision.

The technical organization of service is especially important if massive numbers of burn patients arrive at a hospital ward (for example, in the case of a mass accident or atomic attack). In this case the success of therapy depends to a great degree upon the degree of organization of the work of the various service sections, whether they are synchronized with each other, and this task demands even better organizational work, in addition to good professional service!

The handling of mass burn wounds exceeds the capacity of a small-staff surgical ward. Thus in such a case the entire personnel of the hospital usually would have to be mobilized.

The major principles and practical problems of handling mass burn wounds are summarized in the following.

In the interest of appropriate preparation the following tasks must be resolved following notification of mass wound cases:

1. alerting and transportation to the hospital of the necessary personnel;

2. the individual functioning sections (brigades) must be set up;

3. preparation for surgical handling;

4. material preparation;

5. hospital space must be provided.

Item 1. If mass wounds occur during the regular hospital day, personnel of other wards, in addition to the surgical ward, must be placed into service in proportion to the number of expected burn cases. Thus it is possible that only one or two doctors and nurses will be needed to reinforce the surgical ward, but it also may become necessary to take the entire professional staff into account in the course of the performance of other, non-urgent tasks. The personnel staff must be mobilized on the basis of this principle outside the hospital work day, always in proportion to the probable magnitude of the task. Usually, news of an emergency and of the number of injured is received by telephone, which allows a certain period of time for the delegation and performance of personnel measures. During night hours, outside the regular hospital day, alerting and transportation of hospital personnel may be accomplished according to the radio plan developed for each hospital. It need not be emphasized that transportation of the heads of the administrative staff, surgical personnel and material service to the hospital is the most urgent task.

Item 2. Well-coordinated sections must be set up for handling the arriving burn cases from reception at the hospital to operating room treatment. The main task of the doctor in charge of the handling of mass burn patients is to coordinate these sections so that no congestion occurs in their continuous work, and to ensure that complex handling occurs according to stages, interconnected according to the condition of the patient.

The treatment of burn wounds must be directed by a surgeon, especially a surgeon with considerable experience and practiced in diagnosis, alleviation of shock, and especially in the field of burn wounds. The post of the receiving-classification doctor is an especially important one. This is the first point at which the wounded arrives, and this is where the severity of the wound, the urgency and priority of handling, and the necessity of anti-shock treatment must be decided upon. This is where it is determined which patient must be sent to the anti-shock point, which patient is to be indicated for immediate wound treatment or surgery -- in fact it may be said that this is where the fate of the wounded is determined. Thus it is understandable that the best trained, most experienced specialists must be delegated to this position.

It must be mentioned in connection with the work of the receiving-classification section, also, that the status of an already existing shock condition, or threat of an imminent shock condition, must be taken into consideration in every case of serious burn wounds. The necessary medical intervention must be begun without delay for the prevention or reduction of shock. Thus anti-shock treatment must begin for each shock patient at the very first point, at the receiving-classification point. This point must be ready to administer intravenous morphine, or for the application of hibernating drugs which are gaining increasing application in the field of modern shock prophylaxis.

Work sections (brigades) to be set up:

1. receiving-classification;
2. shock-reduction brigade;
3. surgical handling brigades;
4. burn ward section;
5. laboratory section;
6. material (supply) section.

Item 3. The crucial period in the handling of patients is the first 24 hours, when shock-reduction and surgical treatment are most important. Because of this ensuring the functional capacity of the most important work sites: the receiving room, the shock-reduction and operating-bandaging rooms are tasks of prime priority. At every surgical section preparations must be made for aseptic handling, and provisions must be made for great consumption of materials and for continuous replacement of these materials, primarily those materials which are necessary for surgical treatment and reduction of shock.

Item 4. The prime necessity in the field of material supply is that of ensuring medical provisions. In mass burns extraordinary quantities of certain items are needed, and thus these items must be prepared, and as necessary urgent directions must be issued for continuous supply. Thus, for example, great consumption of ammonium solution, sterile bandages, pain alleviators, infusion solutions, penicillin, streptomycin, vaseline, serotype serum, plasma-substitutes, etc., must be taken into account. Hibernation also frequently becomes necessary, as a modern therapeutic measure, and thus the acquisition and preparation of suitable hibernating agents must be provided for.

Organization of blood supply is of special importance. At present every hospital, including those in rural areas, has a certain reserve of preserved blood. This reserve, however, is nowhere nearly as great as to be adequate for the situation under discussion. Thus the first task is to mobilize the entire source of blood supply and, estimating the anticipated blood demand, to take measures for continuous replacement of the quantity of blood needed. Telephone and telegraph contact must be made with the regional blood supply sub-center to order preserved blood and plasma. Some time is required for the arrival of the blood shipment, however, which may run to one-half day or one day. As a more rapid solution the domestic donor

guard must be mobilized, and the social donor activist groups also must be taken into consideration, including primarily the Red Cross.

A separate work group must be set up to take blood from the domestic and social donors, which performs the taking of blood, and the administration and care of the blood donors. The donated blood is used in the form of citrated blood. This work group most properly is subordinated to the head of the shock-reduction brigade.

Because of the need for urgency, in addition to blood taken from the domestic donors, the use of plasma substitutes is very important in anti-shock treatment. This must be emphasized because considerable quantities of blood reserves may not be counted upon in the initial period. In addition, the aforementioned blood-taking work group cannot always be formed because the handling of mass wounded may occupy all staff personnel. Furthermore, the concept of saving blood and plasma primarily for blood-loss and radiation cases should not be ignored. At present Plasmodex, Dextran, Periston (PVP) and similar substitutes are available in unlimited quantities, and one of the most important fields of application of these substitutes is in the reduction of shock in burn victims. Thus, large quantities of these substances may be needed. One of the tasks of the shock-reduction brigade in the preparation stage is the preparation of an adequate amount of plasma substitute in order to ensure continuous shock reduction until the blood preparations are secured.

In the course of preparations it must not be overlooked that the other material supplies, such as clothing (bedding, sheets, towels), food (large quantities of liquid supplies, protein and vitamin-rich nutrients) all require preliminary preparation.

Item 5. Preparations must be made in advance to ensure hospital space for the injured. It is best to vacate one section of the hospital, so that the burn victims will be all in the same place. This best ensures nursing and control. Profiling should be taken into consideration early: mild and serious burn victims should be placed in a single ward room, the shock victims require a separate, smaller site, and moribund victims should be provided with a separate room. The necessary bed space is provided in advance through transfer or discharge of patients, and spare beds may be placed in the ward for the less serious burn cases. It is not advisable to place the beds of the serious cases to close together because they require much attention (turning the patient, bandaging, transfusions, etc.), and this would hinder access to the beds. The bed linens should be changed as soon as the vacating of a ward is ordered, because there is hardly time for this after the wounded arrive.

The work of the individual sections in outline:

I. Receiving-classification section:

A. During preliminary preparation period:

- (a) organization of its work site (in a site which permits entry of stretchers and has sufficient room to accommodate many patients waiting on stretchers);

- (b) preparation of bed space and stretchers, preparation of shower and clothes room;
 - (c) preparation of examination instruments and of the necessary medicines;
 - (d) preparation of bandages (in sterile packages), sheets and heating blankets;
 - (e) nutrition: hot drinks, tea, coffee;
 - (f) case history documentary forms, colored classification signs.
- B. At the arrival of the wounded:
- (a) receiving, first examination, determination of the degree and extent of burn, urgency classification (the Berkow posters are very useful). In addition to the Berkow plan, the "nine standards" of Wallace are widely known, which give orientation as to the body surface ratios in easily noted numbers;
 - (b) disrobing, major cleansing, bathing of less seriously wounded;
 - (c) aseptic cover bandaging (temporary), if not applied at the first aid station;
 - (d) alleviation of pain, beginning of anti-shock treatment (i.e., morphine, hibernating measures), warm drinks, circulation drugs: periphery stimulants, strophanthin;
 - (e) documentation: personal data, brief status, intervention performed, entering handling and drugs administered in the case-history sheet (the colored sign panels used at first-aid stations have been found very satisfactory, which call attention to the degree of urgency of transportation and handling);
 - (f) further transportation of the wounded to the professional handling site (separate transportation group).
- II. Shock-reduction brigade.
- A. During preliminary preparation period:
- (a) preparation for large number of examinations (blood group);
 - (b) estimation of the probable blood demand;
 - (c) preparation of the available stock of blood, plasma, substitutes, anti-shock and infusion solutions;
 - (d) urgent blood order, mobilizing donors, organization of the blood-taking and donor waiting rooms;
 - (e) formation of the blood-taking group.
- B. After arrival of the wounded:
- (a) grouping of the wounded;
 - (b) anti-shock treatment, continuous observation and laboratory control of those under treatment;
 - (c) documentation on the case-history sheet;
 - (d) continuous cleaning and sterilization of the equipment and instruments;

- (e) issuing blood for the surgical treatment site;
- (f) continuous contact with the receiving-classification center and the operating room for the purpose of forwarding the blood demand and the wounded;
- (g) continuous taking of blood from the arriving donors.

III. Surgical treatment section.

A. During preliminary preparation period:

- (a) preparation of the operating room and bandaging room;
- (b) preparation of instruments and garments, immediate commencement of sterilization after use;
- (c) preparation of large amounts of sterile bandages, garments, novocain, ammonia solution, phys., NaCl, etc.
- (d) filling the bandaging site for mildly wounded with supplies.

B. After arrival of the wounded:

- (a) aseptic surgical handling of wounded received from the receiving-classification center and from the shock-reduction center, insertion of permanent catheter in seriously wounded;
- (b) continuous sterilization and material supply;
- (c) documentation in the surgery book and on the case-history sheet;
- (d) continuous maintenance of asepsis and cleanliness.

IV. Pathological section.

A. During preliminary preparation period:

- (a) equipmentation of adequate beds in the indicated ward rooms, pre-heating of beds, organization of an isolation room;
- (b) preparation of equipment and drugs, advance ordering in case of heavy consumption;
- (c) advising the kitchen service of the anticipated patient nutrition demand.

B. After arrival of the wounded:

- (a) grouping of the already treated, mild cases;
- (b) handling of post-operative patients, continuation of anti-shock treatment, antibiotic treatment, administration of prophylactic injections, etc.;
- (c) continuous clinical observation and control;
- (d) therapeutic nutrition;
- (e) detailed documentation on the case-history sheet and fever chart.

V. Laboratory section.

A. During preliminary preparation period:

- (a) material preparation for large-scale, practical blood and urine examinations, setting up portable laboratory trays;
- (b) making contact with the shock-reduction center and with the operating room section.

B. After arrival of the wounded:

(a) continuous performance of laboratory examinations according to the requirements of the therapeutic sections, ensuring that the test material is taken at the site, transported to the laboratory, and the results are forwarded to the observing doctor as soon as possible, hourly control of urine volume through graduated urine bottles and fixed catheters;

(b) continuous cleaning and replacement of equipment;

(c) documentation of examinations.

VI. Supply service.

First of all, the public health supply service must begin functioning and stock up the work groups which have been established within the shortest possible time, and then continuously replace the consumption. The principles of the quantitative and qualitative demands of public health materials have been expressed in the foregoing.

Assistance must be given to the placement and clothing service in the organization of the established sections, especially the receiving-classification and bed assignment sections.

The nutrition service prepares for special therapeutic nutrition of the wounded in accordance with the doctors' prescriptions. It must be noted that the production of large quantities of liquids (tea, coffee, soup) and of foods rich in vitamins and protein will be necessary (especially after the third day).

A rehearsal was conducted at our hospital on the basis of the above principles, assuming that it was necessary to handle mass burn cases. The individual handling sections were organized and placed in operation, which performed their work representationally, but with mobilization of the necessary personnel and materials. Each section noted the time at which its individual functions were performed. The precision, and errors, of performance were evaluated on the basis of these data and on the basis of observation during the rehearsal.

A few questions of general importance arose, which may be mentioned.

One of these is the problem of documentation. In no section was documentation rational. For example, the receiving-classification section made detailed notation of anamnesis, but made little record of the action taken. However, it would have been important for the next treatment section to know what had been done with the patient up to that time, what treatment and drugs the patient had received. In our opinion, it would be proper for the receiving-classification section not to spend time on recording a detailed anamnesis, and to limit itself to determining the status of the patient (and if the patient may be forwarded more rapidly, even this is not necessary) and to making a detailed notation of its treatment of the patient and the drugs administered. The shock-reduction section notes the status determined by it, the anti-shock treatment it performs, laboratory findings, and other

observations. At the operating room detailed notes are made on the surgical record book and only a brief outline is noted in the case-history sheet, and if no previous notation had been made on localizations, this also is inserted on the case-history sheet at the operating room. The bed assignment ward finally makes out a detailed anamnesis, and surveys the case-history sheet of the change in status of the patient, the examinations which have been performed on the patient, and of therapeutic action taken. In general, documentation should be guided by the principle that data which may be entered later can wait and should not be allowed to hinder the continuity of handling of the patient, the various sections should not become lost in paper work, but on the other hand the precise professional work of the subsequent brigades should not be made more difficult because of incomplete data.

The question of the time and place of administration of antibiotics and protective serums also arose. In principle the wounded should receive antibiotics and antitetanus injections as soon as possible. The earliest point at which these may be administered is in the receiving-classification center. However, the patients usually receive only the first portion of the antitetanus serum at this point, and the later portions are administered by the second or third brigades. With a large number of wounded and with rapid forwarding of patients, however, this invariably leads to confusion. It is not crucial to the outcome of the patient whether he receives the antibiotic or serum doses one-half, one-, or even two-hours later. In our opinion errors, confusion and delay may be avoided by administration of these injections after surgical treatment, and their administration according to the prescribed intervals should begin at this point.

Foresight always must be exercised in the field of material supply. Large-scale consumption of materials has been discussed in the foregoing. According to experience, the handling of patients is greatly speeded up if prepared sterile bandages are on hand in advance, in various standard sizes. The preparation and sterilization of these bandages should begin at least upon receipt of the emergency alarm.

It is our experience that the doctor directing the handling of patients should not tie himself down to one work site, but should direct the entire work of the handling of patients in an operational manner. In the event of a bottleneck, despite the best means of communication this doctor may best effect his control by personally appearing at the site and taking immediate action. Thus it is best to keep the director independent, so that he may exercise direction and facilitate the motion of the entire action by telephone from a central location, or by appearing personally at the site, as needed.

As mentioned in the introduction, the handling of mass burn wounds places a serious task before the entire institution, and involves the total personnel. This work requires the most precise coordination of individual sections. Each section must know its task, must prepare

for full operation within a short time, and must carry out the handling of patients rapidly and without congestion. This is possible only if the personnel works efficiently and if material supply has been prepared in advance. This goal necessitates the clarification and definition of the problems and practices of the organization of the handling of mass burn wounds.

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II. REGARDING A PSYCHOLOGICAL ORIENTATION TEST FOR AVIATION CANDIDATES

Pages 33-35

Dr. Karoly Akos

The selection of individuals applying for aviation is a very important problem. This fact was first very clearly indicated by the experiences of World War I. It was found that among pilots trained without preliminary selection more were casualties in accidents than as a result of enemy action. The technical development of flight during the interim emphasized the importance of determination of suitability for flight prior to training.

This testing is being carried out in many different methods all over the world, and are aimed at revealing the symptoms of any diseases and excluding from flight those persons with chronic ailments which are in a compensated status or, what is more difficult, are aimed at exposing a lowered level of tolerance to strain through strain tests. It is noteworthy that the suitability tests of aviation candidates generally agree throughout the world, with the exception of one field: psychology.

In many countries expensive, complicated and lengthy procedures are used in psychological tests. These consist of extremely varied components, and their description far exceed the limits of the present article. They give a relatively good prediction of the expected results of basic training, but not of aptitude for difficult tasks.

Despite all their differences, the various tests agree in the following. The candidates are subjected to tests considered to be characteristic of psychic criteria important from the point of view of aviators. The success of the tests then are compared with the results or failures of training, or aviation activity.

In our opinion, which cannot be discussed in detail in the present article, this method has two basic faults.

The psychological criteria (intelligence, emotional types, etc.) taken as the starting point are too sophisticated, and the correlation is controlled only with the results of training, and not with the total activity of the aviator.

We started out in a radically different direction. We sought data of the successful aviators which were characteristic of the majority, independent of each other, and independent of all correlations. Our starting point was that if we succeeded in finding such data they may serve as a standard for judgment of candidates, irrespective of whether they have any connection with characteristics used in psychology.

The more, simple data we have which may be detected by simple methods and which contain no repetition, the more reliable is the average which we have found and the more suitable it is for use as a standard.

We originally started with 23 partial tests. These were partly known methods, partly simplifications of known tests, and partly previously unused tests. The criteria in their selection were that they may be performed rapidly and that they refer to very different fields. The possible answers gave 88 variations.

The following is a brief description of the examinations:

Repetition of a well-known common saying in other words.

Repetition of a number consisting of six digits. Repetition of a five-digit number in reverse order. Underlining of the letter "e" in a printed text which was identical in all cases for one and one-half minutes (total number, number of errors, error pattern: at the beginning, middle or end of the text).

Adhering to the customary psychological nomenclature, these tests refer primarily to intellectual activity.

The following test was a scribbling experiment for determination of autonomic movement, published in 1940 by Antal Gonyei (Steif). Five dots had to be inscribed regularly in a domino-five pattern in every other square of each row of a square-ruled octavo sheet of paper (persistance, precision). The point of coincidence of two imaginary, moving dots had to be indicated on the well-known optical illusory geometric figure of a cube drawn on a plane surface and extended along each edge (spacial orientation). Utilizing free time we asked the subjects about his interests and questioned him concerning his personality. Other questions were: does he bear a grudge, is he upset for a long time by annoyances, does he have, or had he had very close friends, does he have enemies? (emotions).

We emphasize that in the construction of the tests we were not guided by the theories that the tests should indicate characteristics in agreement with the customary psychological terminology. We intended merely to point out that our tests could not be considered one-sided in this aspect.

Statistical processing of the data obtained revealed that the results of only seven tests gave an average characteristic of the great majority of the aviators. The agreeing results were the following:

- I. Correct repetition of a common saying in his own words (92 percent).
- II. Does not bear a grudge (77 percent).
- III. Is not upset by annoyances for a long time (70 percent).
- IV. Has a very close friend or friends (88 percent).
- V. Is well oriented on the plane projection of a cube (77 percent).
- VI. and VII. Two data in connection with underlining the letter "e", the total number and the number of errors (78 and 77 percent, respectively).

These seven data came into being through elimination of the domino-five test, the results of which completely coincided with the letter "e" test, which indicates the mutual "factor" of the two.

The other tests were abandoned because their results gave no average characteristic of the majority. In this respect it is noteworthy that the aviators do not belong to any of the Pavlov types characterized by the dominance of any trait system, but are distributed between these types. They are not characterized by technical interests, either. Their autonomic movement also is varied.

Our results were subjected to a control test one-half year later. As a result of the control data III. and IV. had to be dropped as insufficiently stable. The stability of the remaining is indicated by the fact that as a result of the second examination the deviation from the results of the first examination were found to be the following:

- I. 16 percent
- II. 24 percent
- III. 16 percent
- IV. 16 percent
- VI. 20 percent.

These deviations, however, are not correlative to each other.

The results of 83 percent of the aviators agreed in at least four of the above five data.

Thus, we obtained an extraordinarily simple testing method which may be performed in five minutes.

What does this method establish?

It shows whether a candidate agrees with the great majority of successful aviators from the above five points of view. In our opinion the fact that a candidate's test results agree with the majority does not permit the conclusion that he is suitable to become an aviator, but if his results diverge from the above majority it is a warning signal. Such a divergence in itself does not constitute cause for exclusion, but such a candidate must be tested more thoroughly.

Are the averages thus obtained characteristic only of aviators? This is improbable. Tests given to non-aviators, and not detailed herein, indicate that our averages probably are the data of healthy young men.

This, however, does not detract from the value of its orientation, because it is fairly certain that those who diverge from the average are not suitable to be aviators.

We consider the method described to be suitable only for quick orientation. It is quite possible, however, that sufficient data may be obtained on the same basis from representative groups which may serve as a definite standard for, say outstanding aviators. The number of tests may be increased at will, taking care only that the data obtained shall not be parallel for the individuals tested, or that they should not refer to the same factor, and that the data should be sufficiently stable. In other respects the orienting method described refers only to data of a positive nature. A similar attempt may be made to seek negative correlations, or data which occur in exclusively small quantities in aviators.

The data of the tests described agree theoretically with the following results of a publication edited by Flanagan and describing US tests which were administered to many hundreds of thousands of candidates during World War II. The presence of 90 to 100 independent factors determining behavior, and not merely several basic psychological characteristics, may be judged through analysis of the test data by a mathematical method called factor analysis.

This is corroborated by the fact that through repetition of our tests we obtained certain deviations which, however, occurred independently of each other, and were not correlative. Thus the suitability for flight should not be conducted along the line of a search for individual, allegedly central psychological characteristics as presently is very extensively propounded in the West, especially in connection with emotional characteristics.

Summary

1. The basis of the five-minute examination of the suitability of aviation candidates is five psychological data in which the great majority of successful aviators agree with each other.
2. Aviators do not belong to a special category.
3. The probable behavior of aviators cannot be judged through observation of one or two "basic traits," but it is possible to find data characteristic of representative groups.

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